

Appendices

Appendices

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Appendix A-Technical Assessment Team and Chronology of Activities

Technical Assessment Team

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Chronology of Activities

4-6 June 1991--Sacramento

The Core Group met to set up a tentative calendar; schedule field trips; identify and schedule needed workshops; assess the information needed from each National Forest, such as maps and other spotted owl data; discuss other needs, such as a reference library and computer hardware and software.

11 June--Sacramento

Arranged for office furnishings and equipment.

- 12 June-Berkeley
Meeting to discuss editorial needs and related matters.
- 18 June-Sacramento
Review of timber sales in planning stage or under contract.
- 24-29 June-First field trip
On-the-ground inspection of California spotted owl habitat and research study areas in the Sierra Nevada, including nesting, roosting and foraging sites. The first two days were spent on the Eldorado National Forest (NF) and Fruit Growers Supply Company's lands; the third day was on the Tahoe NF, taking us to one of our highest elevation nests at 7,000 feet; the fourth day was spent in visiting Sierra Pacific Industries' lands on the Tahoe NF; the fifth day was on the Plumas NF; and the sixth day was spent on the Lassen NF.
- 8-13 July-Second field trip
This week was a continuation of visits to California spotted owl habitat and research study areas. The first day was spent on the Stanislaus NF and Fiberboard Industries' lands; the second day was on the Sierra NF; Sequoia National Park was visited on the third day; the fourth day was spent on Sequoia NF; the fifth and sixth days were spent on the Los Padres NF visiting the southern part and northern part, respectively.
- 22-26 July-Sacramento
The Team invited Forest Biologists and Conservation Biologists to attend up-coming meetings.
- 26 July
Meeting with fire specialists. Informal discussion of fire history and current fuel conditions in the Sierra Nevada and southern chaparral areas.
- 26 July
Meeting to discuss information needs on timber resources.
- 29-30 July-Sacramento
29 July
Met with Sierran Forest Biologists (from the Lassen, Plumas, Tahoe, Eldorado, and Lake Tahoe Basin Management Unit) to apprise them of the September 27-28 Biology Workshop to be held in Sacramento. Additional invitations went to the Sierra, Sequoia, Angeles, San Bernardino, Cleveland, and Los Padres NFs.
- 5-9 August-Sacramento
Technical Assessment Team still contacting people with regard to the upcoming Biology Workshop.
- 5 August
Session with biologists from Tahoe NF.
- 6 August
Meeting with Northern Spotted Owl Recovery Team biologist's sub-committee to review Dr. McKelvey's spatially explicit population simulation model. Recommended structural changes and methods of parameterization.
- 8 August
Mapping session with biologists from the Tahoe NF.
- 9 August
Planning session with cartographers.
- 19-22 August-Third field trip
The first day was spent on the Angeles NF; the San Bernardino NF was visited on the second day; the third day was divided between Mount San Jacinto and Palomar Mountain; and the fourth day was spent on the Cleveland NF in the Laguna Mountains.
- 26-30 August-Sacramento
26 August
Meeting with cartographers to discuss options for producing maps.
- 27-28 August
Biology Workshop with 55 participants from all the NFs in Region 5 to discuss the California spotted owl's current status, habitat use and distribution, and future trends of the owl in each National Forest.
- 30 August
Meeting with Steve Self, Sierra Pacific Industries, Redding, California. Presentation and discussion of Sierra Pacific Industries' owl plan--approach, habitat descriptions, implementation, guidelines, and so on.
- 8-13 September-Sacramento
Formulating working library and gathering data.
- 10 September
Meeting with Jonathan Bart, Northern Spotted Owl Recovery Team Leader, Portland, Oregon. Reviewed recommendations on parameter values for Kevin McKelvey's simulation model.
- 10-11 September
Conservation Biology Workshop with 36 participants from numerous State and Federal agencies, universities, and private industries throughout the U.S.; discussed a variety of issues and concepts from conservation biology as they might relate to planning for the California spotted owl.
- 23-27 September-Sacramento .
25 September
Meeting with History Group to discuss objectives of their contribution to the CASPO report.
- 1 October-Sacramento
Meeting with timber staffs from all Sierran NFs to discuss the kinds of timber inventory information that could be provided, and how soon. Resolved details on instructions to National Forests on maps needed and tabular information to accompany some maps.
- 7-11 October-Sacramento
7 October
Meeting to discuss fuels management.
- 8 October .
Information exchange with representatives of environmental organizations.
- 11 October
Bureau of Land Management presented their potential owl habitat information.
- 12-13 October-Fourth field trip
Team visited Roseburg Resources Company's lands to gain additional firsthand information on owl habitat on industry lands.
- 14-18 October-Sacramento
17 October
Silviculture Workshop; all-day session with 24 agency, academic, and industry silviculturists participating, along with members from the Core Group.
- 28 October-1 November-Sacramento
30 October
Fifth field trip. Visited Michigan-California Timber Company's lands and compared current forests with old, historic photos of forests and land management from the past 80-100 years.
- 4-8 November-Sacramento
Compiling information for library, mapping, and general data.
- 18-22 November-Sacramento
19 November
Meeting with Fuels Management Specialists to have a full review of all habitat photos taken on the field trips. Discussed their use in depicting spotted owl habitat. Also discussed dead-and-downed woody material and forest stands with regard to fire hazards.
- 20 November
Reviewed progress of the History Group. Viewed and picked possible habitat photos for use in Chapter 5.
- 21 November
Met to review cumulative effects analysis used by Region 5 to determine impacts of green timber sales on California spotted owl habitat.
- 2-6 December-Sacramento
2 December
Meeting to discuss ways in which the Technical Assessment Team and the Policy-Implementation Team can interact most efficiently.
- 5 December
Presentation on the influence of fire on forest structure and composition by John Maupin, Fire Management Officer, Plumas NF, Quincy, California.
- 6-10 January 1992-Sacramento
Team working session.

- 20-24 January-Sacramento
Team working session. 24
January
Coordination meeting with Policy-Implementation Team.
- 3-14 February-Sacramento
4 February
Discussion of possible approaches to risk assessment.
- 11 February
Presentation on forest conditions to be expected, over the long-term, if the California Forestry Reform Act of 1992, or something like it, is enacted by the State Legislature.
- 13 February
Briefing for co-chairs of Steering Committee on current status of the Team's discovery process.
- 24-28 February-Sacramento
Team working session.
- 2-6 March-Sacramento
Team working session.
- 9 March-Fresno
Nine of 13 report chapters sent from Fresno to peer reviewers picked by presidents of scientific societies:
- American Ornithologists' Union
Dr. Richard N. Conner, Research Wildlife Biologist, Southern Forest Research Station, USDA Forest Service, Nacogdoches, Texas.
- The Wildlife Society
Dr. David Graber, Research Biologist, Sequoia/Kings Canyon National Parks, Three Rivers, California.
- The Society for Conservation Biology
Dr. Stanley A. Temple, Professor, Department of Wildlife Ecology, University of Wisconsin, Madison, Wisconsin.
- Ecological Society of America
Dr. Ted Case, Professor, Department of Biological Sciences, University of California, La Jolla, California.
- Society of American Foresters
Dr. Arthur Cooper, Head, Department of Forestry, North Carolina State University, Raleigh, North Carolina.
- 10 March-Arcata
Two additional chapters sent to reviewers.
- 16-18 March-Sacramento
Team working session.
- 23-31 March-Sacramento
Team working on last two chapters of the CASPO report. Vacated Sacramento offices 31 March.
- 1 April-7 May-Fresno and Arcata
Team finishing report with regard to review suggestions and final revisions.
- 8 May-Sacramento
Final report presented to the Steering Committee.

Appendix B-Glossary

Activity center-an area within which an owl or pair of owls finds suitable nesting sites and several suitable roost sites, and in which a substantial amount of their foraging occurs. An activity center can generally be identified by the location of a nest or a primary roost. Other identifiers are recent locations of owls, especially of pairs or reproductive pairs.

Adaptive kernel technique-a method of estimating home-range size in which, first, a bivariate probability distribution is estimated using the observed locations, and then the area of the contour that contains 95 percent of the observed locations is calculated.

Adaptive management-process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans.

Algorithm-mathematical rule for solving a problem.

Allee effect-a depression in the encounter rate between males and females resulting from low population densities; the probability of finding a mate drops below that required to maintain the reproductive rates necessary to support the population.

Allowable sale quantity-(ASQ) the maximum quantity of timber that may be sold by a given National Forest from land capable, available, and suitable for timber production for a time period; usually expressed on an average annual basis.

Basal area-the area of the cross-section of a tree stem near its base, generally at breast height and inclusive of bark.

Biological diversity-the variety of life's forms-that is plants, birds, insects, and so on.

Biomass-the total quantity (at any given time) of living organisms of one or more species per unit of space, or of all the species in a biotic community.

Biomass sale-sale of wood fiber such as logging residue (slash), small diameter live trees and cull logs (other than saw logs), for the purpose of energy co-generation or chip production.

Birth-pulse population-a population assumed to produce all of its offspring at an identical, and instantaneous, point during the annual cycle.

Blowdown-trees felled by high winds.

Bonferroni confidence interval-an individual confidence interval constructed about each estimated proportion within a multinomial contingency table. The width of each confidence interval is adjusted downward to account for the estimation of simultaneous intervals.

Bottleneck-see "population bottleneck."

Burning period-the anticipated period of greatest fire activity during a 24-hour period, typically from 1000 until 1800.

Cambium-a layer of formative cells between the wood and bark in woody plants: the cells increase by division and differentiate to form new wood and bark.

Canopy closure-the degree to which the crowns of trees are nearing general contact with one another.

Carrying capacity-the maximum number of animals that can be sustained over the long-term on a specified land area.

Center of activity-owl's nest site or primary roost area.

Checkerboard ownership-a land ownership pattern in which every other section (square mile) is in Federal ownership as a result of Federal land grants to early western railroad companies.

Cohort-individuals all resulting from the same birth-pulse, and thus all of the same age.

Colonization-the act or process of establishing a new colony or population.

Commercial forest land-forest land tentatively suitable for the production of crops of timber and that has not been withdrawn for other reasons.

Confidence interval-a region lying above and below a parameter estimate (for example, the mean) in which the true parameter value is believed to occur with some specified probability.

Connectivity-a measure of the extent to which intervening habitat truly connects habitats for juvenile spotted owls dispersing between them.

Core area-a defined area that includes the center of activity of a pair, including the nest site if known.

Corridor-defined tract of land, usually linear, through which a species must travel to reach habitat suitable for reproduction and other life-sustaining needs.

Cull-a tree that is not healthy (diseased, broken top, stunted, and so on) and is rejected as not being up to standard for regular timber harvest.

D.b.h.-diameter of a tree at breast height, typically measured in inches.

Demographic rescue-see "rescue."

Demographic stochasticity-random fluctuations in birth and death rates.

Density-dependent-process, such as fecundity, whose value depends on the density of animals in the population.

Dispersal-the movement, usually one way, and on any time scale, of plants (seeds) or animals from their point of origin to another location where they subsequently produce offspring.

Dispersal capability-ability of members of a species to move from their area of birth to another suitable location and subsequently to breed.

Dispersal distance-the straight-line distance traveled by an individual from its birth place until it stops dispersing (assumed to be a breeding site) or dies.

Dominant canopy closure (cover)-canopy closure of only the dominant trees in a stand, expressed as a percentage.

Dry ravel-a form of surface erosion in which dry, unconsolidated material moves down slope under the influence of gravity.

Duff-decaying vegetable matter that forms a layer on the forest floor.

Eastside pine forest-general name for a habitat type occurring generally east of the Sierran crest. It is dominated by ponderosa and/or Jeffrey pine.

Ecological integrity-the condition in which all key components of an ecological system are intact and functioning normally.

Ecotone-contact zone between two plant communities, where elements of each intermingle.

Edge effects-differences in microclimate, flora, fauna, stand structure, habitat values, stand integrity (including resistance to being blown down by high winds) that occurs in or as a result of a transition zone where two plant communities or successional stages come together.

Emigration-permanent movement of individuals of a species from a population.

Environmental stochasticity-random variation in environmental attributes such as temperature, precipitation, and fire frequency.

Epigeous fungi-above-ground fruiting bodies of fungi, in the form of mushrooms; these make up part of the diet of spotted owl prey.

Even-aged forest-a forest stand composed of trees with less than a 20-year difference in age between the oldest and youngest.

Extinction rate-the number of elements (individuals, populations, species) lost per unit of time.

Extinction time-predicted period of time for a population to become extinct.

Fecundity-the number of young per breeding-age female. In model formulations, fecundity usually refers to the number of female young per breeding-age female, calculated by assuming a 1:1 sex ratio.

Fire regime-a description of the frequency, severity, and extent of fires that occur in an area.

Floaters-nonbreeding adults and subadults that move and live within a breeding population, often replacing breeding adults that die; nonterritorial individuals.

Foothill riparian/hardwood forest-general name for a habitat type occurring at low elevations in the Sierran foothills. It includes stands of hardwoods immediately adjacent to streams, as well as dense stands of hardwood forests on the adjoining slopes. Tree species along streams include cottonwood, California sycamore, interior live oak, California buckeye, Oregon ash, and occasionally white alder. Tree species on the adjoining slopes include blue oak, interior live oak, and digger pine.

Forest landscape-land presently forested or formerly forested and not currently developed for nonforest use.

Fragmentation-process of reducing the size and continuity of patches of habitat; specifically in this document, fragmentation is used in reference to forests.

Fuel ladder-dead or living fuels that connect surface fuels to tree or brush foliage and promote spread of fire from ground to vegetation crowns.

Fuel loading-the amount of combustible material present per unit area, usually expressed in tons per acre.

Fuels-combustible materials.

Gene flow-movement of genetic material between populations.

Genetic stochasticity-random changes in gene frequencies from such factors as inbreeding.

Genetic variability-the number of different genes possessed by an individual or population.

Habitat capability-capacity of a habitat to support an estimated number of pairs of a species.

Habitat Conservation Area-(as proposed by the ISC), a contiguous block of habitat to be managed and conserved for breeding pairs, connectivity, and distribution of owls; application may vary throughout the range according to local conditions.

Habitat fragmentation-see "fragmentation."

Habitat mosaic-the mix of habitat conditions across a landscape.

Home range-the area to which the activities of an animal are confined during a defined period of time.

Home range of a pair-the sum of the home ranges of each member of a pair, minus the area of home-range overlap.

Home-range overlap-percentages of the home ranges of two individuals that are shared between them.

Hypogeous fungi-below-ground fruiting bodies of fungi, known as true and false truffles; these are an important part of the flying squirrel's diet.

Initial attack-first action taken to suppress a wildfire, via ground or air.

Interbirth interval-the interval between birth pulses.

Internal recruitment-addition of new breeding individuals to a local population that were born within that same population.

Lambda-the finite rate of population change (population size in year 2 divided by the population size in year 1).

Land Management Plan-a plan written for the management of a National Forest unit, as directed by regulations of the National Forest Management Act of 1976, in which the integrated management of all major resources has been determined through an interdisciplinary team process.

Lands not suited for timber production-lands incapable of producing 20 cubic feet of wood fiber per acre per year, or lands withdrawn from commercial forest harvest for other reasons (see reserved lands).

Lands suited for timber production-commercial forest land identified as appropriate for timber production.

Large sawtimber-forest stands that are characterized by trees that are ≥ 21 inches in d.b.h.

Late seral stage forest-near-final stage in development of a forest from grasses and forbs, through shrubs, small trees, and finally to large, old trees.

Leave strips-generally narrow bands of forest trees that are left along streams and rivers to buffer aquatic habitats from upslope forest management activities.

Lefkovich matrix-a two-dimensional array of numbers whose entries represent stage-specific estimates of demographic (birth and death) rates. The matrix is used to project population stage structures through time.

Legacy-remnant trees of original forest stands, both alive and dead.

Leslie matrix-a two-dimensional array of numbers whose entries represent the age-specific estimates of demographic (birth and death) rates. The matrix is used to project population age structures through time.

Life table-mathematical table illustrating the age-specific birth and death rates of a population.

Linear model-a combination of random variables, none of which has exponents that differ from 1.0.

Linear regression model-an equation that explains some amount of the variation in a dependent variable with a linear combination of one or more independent variables.

Live oak/bigcone Douglas-fir forest-general name for a habitat type that occurs in a narrow band, mostly at mid-elevations, in mountains of all four NFs in southern California. Dominant tree species are canyon live oak, coast live oak, and bigcone Douglas-fir.

Locus-the point (for example, along an axis of a graph) at which the shape of a mathematical function changes dramatically.

Long term-here, 50 to 100 years and sometimes beyond.

M2G, M3G, M3N, M3P, M4G, M4N, M4P, M5G, M5N, M6-see timber strata.

Managed forest-forest land that is harvested on a scheduled basis and contributes to an allowable sale quantity.

Medium sawtimber-forest stands that are characterized by trees that are 11-20.9 inches in d.b.h.

Metapopulation-a population comprised of a set of isolated subpopulations that are "linked" by the dispersal of individuals, allowing for recolonization of unoccupied habitat patches after local extinction events.

Mesic-moderately moist, in referring to habitats.

Microenvironment-the sum total of all the external conditions in a small or restricted area that may influence organisms.

Microhabitats-a restricted set of distinctive environmental conditions that constitute a small habitat, such as the area under a log.

Minimum convex polygon technique-a method of estimating home-range size in which the smallest possible convex polygon is drawn around the outermost locations where an animal was observed; the area within the polygon is then calculated.

Mixed-conifer forest-general name for similar habitat types in the Sierra Nevada and southern California. It is the predominant timber-producing forest of the Sierra Nevada, consisting of various mixtures of white fir, ponderosa pine (at lower elevations), incense-cedar, sugar pine, black oak, and red fir (at higher elevations). Douglas-fir is an important component from Yosemite NP northward, and giant sequoia occurs in widely scattered localities. In southern California, this type is best developed at relatively high elevations in the San Gabriel and San Bernardino Mountains, and on Mount San Jacinto. Species composition is similar to that of Sierran mixed-conifer, although Coulter pine occurs, bigcone Douglas-fir occasionally occurs at lower elevations; but red fir, Douglas-fir, and giant sequoia are missing.

Mixed-evergreen forest-a forest community that is dominated by two or more species of broad-leaved hardwoods whose foliage persists for several years; important western species include madrone, tanoak, chinquapin, canyon live oak, and California-laurel.

Model-an idealized representation of reality developed to describe, analyze, or understand the behavior of some aspect of it; a mathematical representation of the relationships under study.

Monitoring-a process of collecting information to evaluate whether or not objectives of a management plan are being realized.

Monitoring program-see "monitoring"; the program used to monitor a population and its habitat.

Natal cluster-a group of adjacent animal territories, in one of which an individual was born.

Network-a particular spatial arrangement of entities (blocks or patches of owl habitat in this case) that are interconnected in some fashion (by dispersal of owls in this case).

Null hypothesis-a supposition of no difference between test comparisons (situation A no different from situation B).

Old growth-forest stand with moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large, broken tops, and other indications of decadence; numerous large snags; and heavy accumulations of logs and other woody debris on the ground.

Owl site-an area of unspecified dimensions where a single owl or a pair of owls has been located, usually repeatedly. In demographic and radio-tracking study areas, where efforts to locate all owls are more intense than elsewhere, most owl sites with single owls have eventually been found to have a pair. All owl sites have been mapped and given unique spatial references, so they can be tallied. Designation of an owl site makes no assumption about home-range or territory boundaries of the owls, although usually a center of activity can be identified by the location of a nest or a primary roosting area. The terms "owl site" and "site" are general and often used generically to refer to home ranges, territories, or to sites designated by agencies for special owl management.

Owl use area-an irregularly shaped polygon that contains a known or predicted activity center and encompasses the amount of nesting and foraging habitats typically found within home ranges during the breeding season.

Pair site-an area of variable dimensions on the landscape assumed to be large enough to have an amount of habitat capable of supporting one pair of spotted owls; see "owl site."

Paradigm-an underlying model or representation that characterizes a process.

Physiographic province-a geographic region in which climate and geology have given rise to a distinct array of land forms and habitats.

Ponderosa pine/hardwood forest-(montane hardwood) general name for a habitat type that blends with the upper portion of the foothill riparian/hardwood forest. In the southern Sierra Nevada, ponderosa pine at its lowest elevation generally occurs with interior live oak, canyon live oak, and black oak, with incense-cedar and white fir coming into stands at slightly higher elevations. In the northern Sierra Nevada, tanoak and Pacific madrone commonly contribute to the hardwood component of this type.

Population-a collection of individuals that share a common gene pool through interbreeding.

Population bottleneck-the phenomenon experienced by a small population that is susceptible to the deleterious effects of demographic and genetic stochasticity; also a zone of constriction in the distribution of a population.

Population density-number of individuals of a species per unit area.

Population persistence-general term for the capacity of a population to maintain sufficient numbers and distribution over time.

Population viability-probability that a population will persist for a specified period of time across its range, despite normal fluctuations in population and environmental conditions.

Potential habitat-(1) habitat that has been altered (for example, logged or burned) and is not presently suitable for owls but is believed to have the potential to regenerate into suitable habitat; (2) unsurveyed habitat that appears to be suitable based on comparisons with habitat elsewhere that has known owl sites.

Power analysis-a statistical method for estimating the probability of making a type-II error (failure to detect a difference or a trend that actually occurs, such as a decline in a population of spotted owls).

R3G, R3N, R3P, R4G, R4N-see timber strata.

Red fir forest-general name for a habitat type that blends with the higher portions of Sierran mixed-conifer forest. It is dominated by red fir, with increasing amounts of white fir at lower elevations until it becomes mixed-conifer forest. At upper elevations it often includes some lodgepole pine and occasionally quaking aspen.

Redwood/California-laurel forest-general name for a habitat type that is restricted to the central coast range, where coast redwood, California-laurel, tanoak, Pacific madrone, red and white alder, coast live oak, Santa Lucia fir, and bigleaf maple form various mixtures.

Regulated forest-theoretical managed forest from which the same acreage of trees can be removed annually, in perpetuity.

Rescue (rescue effect)-periodic immigration of new individuals sufficient to maintain a population that might otherwise decline toward extinction.

Reserved land-Federal lands unavailable for timber yield or management due to being a National Park or classified as a Wilderness Area in a National Forest.

Reserves-tracts of forest temporarily or permanently set aside from logging.

Restricted harvest-land either withdrawn from logging or where timber production is limited to less than clearcutting.

Riparian/hardwood forest-general name for a habitat type that varies considerably in different parts of southern California. In deep canyons in the Los Padres NF, for example, it occurs in narrow strips adjacent to permanent or near-permanent streams. Common tree species include coast live oak (near coast), canyon live oak (interior locations), California sycamore, white alder, California-laurel, and cottonwood. In shallower canyons in the Cleveland NF, these forests may consist almost exclusively of coast live oak.

Rotation-the planned number of years between the regeneration of an even-aged stand and its final cutting at a specified stage.

Saw kerf-the cut or channel made by a saw.

Scansorial-adapted for climbing.

Search capability-the ability of a dispersing juvenile or adult owl to locate suitable habitat.

Search efficiency-proportion of dispersing juveniles or adults that locate minimally suitable habitat before they die.

Search time-number of days required for an average dispersing individual to locate suitable or better habitat.

Seed-tree cut-an even-aged regeneration cutting in which only a few seed trees per acre (fewer than for a shelterwood cut) are retained until after new tree seedlings are established.

Senescence-state of being old; characterized by having attributes associated with old age.

Sensitivity coefficient-term that measures relative degree of change in outcome of a mathematical expression or equation after a specified change in an individual component.

Shelterwood cut-an even-aged regeneration cutting in which new tree seedlings are established under the partial shelter of seed trees.

Short term-here, 1 to 50 years.

Sink-population whose average reproductive rate is less than its average rate of mortality; area that attracts immigrants not expected to contribute significantly to future populations (see "source").

Site-an area considered from the standpoint of its use for some specified purpose (for example, habitat studies, owl locations-see "owl site," and logging operation).

Small sawtimber-forest stands that are characterized by trees that are <11 inches in d.b.h.

Snag-standing dead tree.

Source-an actively breeding population that has an average birth rate that exceeds its average death rate; produces an excess number of juveniles that may disperse to other areas.

Standards and guidelines-directions generated and followed in management plans.

Stochastic-random, uncertain; involving a random variable.

Stochastic fecundity-random fluctuation in a population's rate of producing offspring.

Subpopulation-a well-defined set of interacting individuals that comprise a proportion of a larger, interbreeding population.

Suitable habitat-here, an area of forest vegetation with the age-class, species of trees, structure, sufficient area, and adequate food source to meet some or all of the life needs of a California spotted owl.

Sustained yield or production-the amount of timber that a forest can produce continuously from a given intensity of management; implies continuous production; a primary goal is to achieve a balance between incremental growth and cutting.

Synoptic weather pattern-large-scale weather pattern.

Territory-the area that an animal defends, usually during the breeding season, against intruders of its own species.

Threshold phenomenon-a pattern or trend, as in population growth rate, that exhibits relatively long periods of slow change followed by precipitous increase or decrease in response to a slight change in an environmental gradient.

Timber strata-M = mixed conifer, R = red fir, P = ponderosa pine; 2 = trees <12 inches in d.b.h., 3 = trees 12-23.9 inches in d.b.h., 4 = trees ≥24 inches in d.b.h.; G = good canopy cover (70+ percent), N = normal canopy cover (40-69 percent), P = poor canopy cover (0-39 percent). Hence, an M4G stand is mixed-conifer with trees ≥24 inches in d.b.h., and canopy cover ≥70 percent; an R2P stand is red fir with trees <12 inches in d.b.h., and 0-39 percent canopy cover.

Torpid-having lost temporarily all or part of the power of sensation or motion, as a hibernating animal.

Total canopy closure (cover)-canopy cover by all vegetation 7 feet or higher above the ground, expressed as a percentage.

Truffles-the below-ground fruiting bodies of hypogeous fungi, which are a major food source for flying squirrels and other small mammals.

Turnover-a term in population analysis that indicates the rate or number of identifiable adults that die and are replaced during a specified period.

Type conversion-conversion of an area from one habitat type to another, such as oak woodland to annual grassland.

Type-I error-statistical term for the error made when a null hypothesis that is true is rejected; for example, concluding that a difference exists between two populations that are identical.

Type-II error-statistical term for the error that is made when a null hypothesis that is false is not rejected; that is, concluding that no difference exists in a comparison between two populations when a difference does exist.

Variance-a statistical term that indicates a measure of variability within a finite population of a sample; the total of the squared deviations of each observation from the arithmetical mean divided by one less than the total number of observations.

Viability-ability of a population to maintain sufficient size so that it persists over time, in spite of normal fluctuations in numbers; usually expressed as a probability of maintaining a specific population for a specified period.

Vital rates-collective term for the age-specific birth and death rates of a population.

Windthrow-a tree or group of trees uprooted by the wind.

Xeric-dry, in referring to habitats.

Appendix C-Species List

Common Name	Scientific name
Lower Plants	
Algae	Division Chlorophyta (various species)
Fungi, epigeous	Divisions Ascomycota and Basidiomycota. Common genera in the Sierra Nevada include <i>Boletus</i> , <i>Amanita</i> , <i>Cortinarius</i> , and <i>Armillaria</i>
Fungi, hypogeous	Divisions Ascomycota and Basidiomycota. Common genera in the Sierra Nevada include <i>Rhizopogon</i> , <i>Gautieria</i> , <i>Geopora</i> , <i>Melanogaster</i> , and <i>Hymenogaster</i>
Lichens	Division Ascomycota (various species)
Chartreuse	<i>Letharia vulpina</i>
Hair	<i>Bryoria fremontii</i>
Staghorn	<i>Usnea ceratina</i>
Moss	Division Bryophyta, Class Muscopsida, (various species)
Grasses/Forbs	
Bitterroot, meadow	<i>Lewisia nevadensis</i>
Brodiaea, golden	<i>Brodiaea lutea</i>
Buckwheat, California	<i>Eriogonum fasciculatum</i>
Chinese nests	<i>Collinsia concolor</i>
Grass	<i>Gramineae</i> spp.
Lupine, broad-leaf	<i>Lupinus latifolius</i>
Trefoil (bird's foot)	<i>Lotus</i> spp.
Shrubs	
Blackberry, California	<i>Rubus ursinus</i>
Buckbrush	<i>Ceanothus cuneatus</i>
Buckeye, California	<i>Aesculus californica</i>
Ceanothus	<i>Ceanothus</i> spp.
Chamise	<i>Adenostoma fasciculatum</i>
Cherry, hollyleaf	<i>Prunus ilicifolia</i>
Chinquapin, golden	<i>Castanopsis sempervirens</i>
Chokecherry	<i>Prunus virginiana</i>
Coffeeberry, California	<i>Rhamnus californica</i>
Currants	<i>Ribes</i> spp.
Deerbrush	<i>Ceanothus integerrimus</i>
Elderberry	<i>Sambucus</i> spp.
Gooseberry, rock	<i>Ribes quercetorum</i>
Hazel, California	<i>Corylus cornuta</i> var. <i>californica</i> (Hazelnut)
Jim brush	<i>Ceanothus sorediatus</i>
Juniper, mountain	<i>Juniperus communis</i> var. <i>saxatilis</i>

Common Name	Scientific name
Shrubs	
Manzanita	<i>Arctostaphylos</i> spp.
Mountain mahogany,	<i>Cercocarpus ledifolius</i> curlleaf
Poison oak	<i>Rhus diversiloba</i>
Rose, California wild	<i>Rosa californica</i>
Sage, coastal	<i>Artemisia californica</i>
Sage, White	<i>Salvia apiana</i>
Sagebrush, big	<i>Artemisia tridentata</i>
Sagebrush, California	<i>Artemisia californica</i>
Serviceberry, western	<i>Amelanchier alnifolia</i>
Sumac, lemonade	<i>Rhus integrifolia</i>
Toyon	<i>Heteromeles arbutifolia</i>
Whitethorn, mountain	<i>Ceanothus cordulatus</i>
Willows	<i>Salix</i> spp.
Yerba-Santa	<i>Eriodictyon</i> spp.
Yucca	<i>Yucca whipplei</i>
Other	
Mistletoes, dwarf	<i>Arceuthobium</i> spp.
Trees	
Alder, red	<i>Alnus rubra</i>
Alder, white	<i>Alnus rhombifolia</i>
Ash, Oregon	<i>Fraxinus latifolia</i>
Aspen, quaking	<i>Populus tremuloides</i>
Boxelder, California	<i>Acer negundo</i>
Buckeye, California	<i>Aesculus californica</i>
California-laurel (bay)	<i>Umbellularia californica</i>
Cedar, incense -	<i>Libocedrus decurrens</i>
Chinquapin, giant	<i>Castanopsis chrysophylla</i>
Cottonwood	<i>Populus</i> spp.
Dogwood, Pacific	<i>Cornus nuttallii</i>
Douglas-fir	<i>Pseudotsuga menziesii</i>
Douglas-fir, bigcone	<i>Pseudotsuga macrocarpa</i>
Fir, red (Shasta)	<i>Abies magnifica</i>
Fir, Santa Lucia	<i>Abies bracteata</i>
Fir, white	<i>Abies concolor</i>
Hazelnut, California	<i>Corylus cornuta</i> var. <i>californica</i> (hazel)
Hemlock, mountain	<i>Tsuga mertensiana</i> (black)
Incense-cedar	<i>Libocedrus decurrens</i>
Juniper, California	<i>Juniperus californica</i>
Juniper, western	<i>Juniperus occidentalis</i> , <i>J. australis</i>
Laurel, California- (bay)	<i>Umbellularia californica</i>
Madrone, Pacific	<i>Arbutus menziesii</i>

Common Name	Scientific name
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Trees

Maple, bigleaf	<i>Acer macrophyllum</i>
Oak, black	<i>Quercus kelloggii</i>
Oak, blue	<i>Quercus douglasii</i>
Oak, California scrub	<i>Quercus dumosa</i>
Oak, canyon live	<i>Quercus chrysolepis</i>
Oak, coast live	<i>Quercus agrifolia</i>
Oak, interior live	<i>Quercus wislizenii</i>
Oak, shrub live	<i>Quercus turbinella</i>
Oak, valley	<i>Quercus lobata</i>
Pine, Coulter	<i>Pinus coulteri</i>
Pine, digger	<i>Pinus sabiniana</i>
Pine, foxtail	<i>Pinus balfouriana</i>
Pine, Jeffrey	<i>Pinus jeffreyi</i>
Pine, lodgepole	<i>Pinus contorta</i>
Pine, pinyon	<i>Pinus monophylla</i>
Pine, ponderosa	<i>Pinus ponderosa</i>
(yellow)	
Pine, sugar	<i>Pinus lambertiana</i>
Pine, western white	<i>Pinus monticola</i>
Redwood (coast)	<i>Sequoia sempervirens</i>
Sequoia, giant	<i>Sequoiadendron giganteum</i>
Sycamore, California	<i>Platanus racemosa</i>
Tanoak	<i>Lithocarpus densiflorus</i>
Willows	<i>Salix</i> spp.

Invertebrates

Beetle, bark	<i>Dendroctonus</i> spp., <i>Ips</i> spp., <i>Scolytus</i> spp.
Beetle, fir engraver	<i>Scolytis ventralis</i>
Beetle, June	<i>Ploecoma hoppingi</i>
Cricketer	<i>Gryllus</i> spp.
Fly, hippoboscid	<i>Icosta americana</i> , <i>Ornithomya anchineuria</i>
Worm, flat	<i>Cestoda</i>
Worm, round	<i>Nematoda</i>
Worm, spiny-headed	<i>Acanthocephala</i>

Birds

Goshawk	<i>Accipiter gentilis</i>
Hawk, Cooper's	<i>Accipiter cooperi</i>
Hawk, red-tailed	<i>Buteo jamaicensis</i>
Hawk, sharp-shinned	<i>Accipiter striatus</i>
Mallard	<i>Anas platyrhynchos</i>
Owl, barn (common)	<i>Tyto alba</i>
Owl, barred	<i>Strix varia</i>
Owl, boreal (Tengmalm's)	<i>Aegolius funereus</i>

Common Name	Scientific name
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Birds

Owl, California spotted	<i>Strix occidentalis occidentalis</i>
Owl, eagle	<i>Bubo bubo</i>
Owl, great gray	<i>Strix nebulosa</i>
Owl, great horned	<i>Bubo virginianus</i>
Owl, long-eared	<i>Asio otus</i>
Owl, Mexican spotted	<i>Strix occidentalis lucida</i>
Owl, northern hawk	<i>Surnia ulula</i>
Owl, northern spotted	<i>Strix occidentalis caurina</i>
Owl, pygmy (Eurasian)	<i>Glaucidium passerinum</i>
Owl, short-eared	<i>Asio flammeus</i>
Owl, snowy	<i>Nyctea scandiaca</i>
Owl, tawny	<i>Strix aluco</i>
Owl, ural	<i>Strix uralensis</i>
Partridge, gray	<i>Perdix perdix</i>
Raven	<i>Corvus corax</i>
Sparrowhawk (Eurasian)	<i>Accipiter nisus</i>
Woodpecker, acorn	<i>Melanerpes formicivorus</i>
Woodpecker, red-cockaded	<i>Picoides borealis</i>

Mammals

Bats	<i>Chimptera</i>
Chipmunk	<i>Eutamias</i> spp.
Gopher, Great Basin pocket	<i>Thomomys talpoides</i>
Gopher, mountain pocket	<i>Thomomys monticola</i>
Gopher, southwestern pocket	<i>Thomomys bottae</i>
Mole	<i>Scapanus</i> spp.
Mouse, brush	<i>Peromyscus boylei</i>
Mouse, cactus	<i>Peromyscus eremicus</i>
Mouse, California	<i>Peromyscus californicus</i>
Mouse, California pocket	<i>Perognathus californicus</i>
Mouse, deer	<i>Peromyscus maniculatus</i>
Mouse, house	<i>Mus musculus</i>
Mouse, pinyon	<i>Peromyscus truei</i>
Mouse, western harvest	<i>Reithrodontomys megalotis</i>
Mouse, western jumping	<i>Zapus princeps</i>
Mouse, white-footed	<i>Peromyscus</i> spp.
Pika	<i>Ochotona princeps</i>
Rabbit	<i>Sylvilagus</i> spp.
Rabbit, brush	<i>Sylvilagus bachmani</i>
Rabbit, cottontail	<i>Sylvilagus audubonii</i>
Shrew	<i>Sorex</i> spp.
Squirrel, ground	<i>Spermophilus</i> spp.
California	<i>Spermophilus beecheyi</i>
Golden-mantled	<i>Spermophilus lateralis</i>

Common Name	Scientific name
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Mammals

Squirrel, northern flying	<i>Glaucomys sabrinus</i>
Squirrel, southern flying	<i>Glaucomys volans</i>
Squirrel, tree	<i>Sciurus</i> spp.
Vole	<i>Microtus</i> spp.
Vole, California	<i>Microtus californicus</i>
Vole, long-tailed	<i>Microtus longicaudus</i>
Woodrat	<i>Neotoma</i> spp.
Woodrat, bushy-tailed	<i>Neotoma cinerea</i>
Woodrat, desert	<i>Neotoma lepida</i>
Woodrat, dusky-footed	<i>Neotoma fuscipes</i>

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- Cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands
- Participation with other agencies in human resource and community assistance programs to improve living conditions in rural areas
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Appendices Appendices Consultants and Advisors National Forest System Marlene B. Verner, Compiler Appendix A-Technical Assessment Team and Chronology of Activities Technical Assessment Team Core Group Thomas W. Beck, Forest Biologist, Stanislaus National Forest, Sonora, California. Gordon 1. Gould, Jr., Nongame Wildlife Biologist, California Department of Fish and Game, Sacramento, California. Complex technical and professional activities in a wide variety of contexts. From substantial to wide scope for personal autonomy. Regional and divisional authority in some areas. Regarded as a consultant in some areas. FIGURE H.2.B Levels of Proficiency. H.2.5 Assessment is a critical feature of competency-based training, it ensures that training is efficient and effective in developing the level of proficiency/ competency required to perform the function competently. H.3 Benefits of Competency-Based Training and Assessment for the Safe Transport of Dangerous Goods by Air. H.3.1 The main bene... Appendix A Planning Guides. Self-assessment Statements. The guides also have a series of statements that describe conformance with the Standards (e.g., The internal audit charter clearly defines the purpose, authority, and responsibility of the internal audit activity " Standard 1000) or potential strengths and/or opportunities for improvement (e.g., Key internal audit stakeholders understand and support the internal audit activity's purpose, authority, and responsibility). If the internal audit activity had a formal charter or mandate that did not adequately cover all three attributes, the rating could be Disagree " D. The external assessment team would use a variety of tools and techniques to confirm the strength.